IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Monga Application No.: 09/930095 Filed: 08/15/2001 Title: System, Device and Method for Managing Connection Quality in an Optical Communication System Attorney Docket No.: 120-177 Client No. 14985BAUS01U	Group Art Unit: 2613 Examiner: Singh

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APPEAL BRIEF

Sir:

Please enter this Appeal Brief. A Notice of Appeal was filed on May 29, 2008.

I. Real Party in Interest

The real party in interest is Nortel Networks Limited.

II. Related Appeals and Interferences

Appellants are not aware of any related appeals or interferences.

III. Status of the Claims

Claims 1-27 are pending in this application. All of the pending claims are rejected. A complete listing of the claims, including amendment status, is in Appendix A. The rejections of claims 1-27 are the subject of this appeal.

IV. Status of Amendments

All submitted amendments have been entered and considered.

V. Summary of Claimed Subject Matter

One problem with optical communications networks is that some services are expensive and need to be requested far in advance of use because changes to the optical communication network, such as provisioning and switching optical communication paths, require substantial human intervention.[1] As a result, subscribers tend to purchase services for worst case conditions, rather than what is needed at any given point in time. The presently recited invention helps solve this problem by automatically determining and provisioning a set of application-specific optical network communication services for the user application based at

[1] Specification. at page 2, line 32 through page 3, line 2.

least in-part upon the ascertained communication requirements and non-requirements of the user application. In other words, not only is provisioning automated, but the provisioning is based on application-specific services required by the user application as determined from ascertained communication requirements and non-requirements of the user application. Support for the limitations recited in the independent claims is in the specification and drawing as indicated in bold text below. The listing of support is not intended to be exhaustive, i.e., other support may exist.

1. (previously presented) A method for provisioning network services for a user application in an optical communication system **("The OSA interacts with the optical communication network to obtain various communication services and manages those communication services for the network user based upon predetermined parameters defined by the network user." Page 5, line 31 through page 6, line 1)**, the method comprising:

ascertaining communication requirements and non-requirements of the user application; **("Beginning at block 2402, the OSA ascertains the high-level communication requirements and non-requirements of the network user." Page 36, lines 26-28; Figure 24)**

determining a set of application-specific optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application, **("The OSA determines a set of lower level communication services for the network**

user based upon high-level communication requirements and non-requirements of the network user, in block 2406." Page 36, lines 28-31; Figure 24) the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism **("The OSA may determine such L1 communication services as the routed path, latency, error rate, and protection mechanism for an optical connection." Page 34, lines 29-31; "One way for the OSA to keep the connection cost down is to accept a connection that multiplexes the user's traffic onto an existing lightpath rather than reserving a separate lightpath for the user." Page 35, lines 27-31)**; and

obtaining, from the optical network, the application-specific communication services for the user application **("The OSA obtains the lower level communication services for the network user, in block 2408." Page 36, line 31 through page 37, line 1; Figure 24)**.

6. (previously presented) An optical service agent for provisioning network services for a user application in an optical communication system **("The OSA interacts with the optical communication network to obtain various communication services and manages those communication services for the network user based upon predetermined parameters defined by the network user." Page 5, line 31 through page 6, line 1)**, the optical service agent comprising:

application component logic for ascertaining communication requirements and non-requirements of the user application; **("Beginning at block 2402, the OSA ascertains the high-level communication requirements and non-requirements of the network user." Page 36, lines 26-28; Figure 24)**

network component logic for determining a set of application-specific optical network communication services for the user application based at least in-part upon the communication requirements and non-requirements of the user application **("The OSA determines a set of lower level communication services for the network user based upon high-level communication requirements and non-requirements of the network user, in block 2406." Page 36, lines 28-31; Figure 24)**, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism; **("The OSA may determine such L1 communication services as the routed path, latency, error rate, and protection mechanism for an optical connection." Page 34, lines 29-31; "One way for the OSA to keep the connection cost down is to accept a connection that multiplexes the user's traffic onto an existing lightpath rather than reserving a separate lightpath for the user." Page 35, lines 27-31)** and

network component logic for obtaining the application-specific communication services for the user application **("The OSA obtains the lower level communication services for the network user, in block 2408." Page 36, line 31 through page 37, line 1; Figure 24)**.

12. (previously presented) A device comprising:

a user application **(User Application 710, Figure 7)** requiring communication services from an optical communication network **(ASON 120; throughout the drawing)**; and

an optical service agent **(OSA 610, Figures 6, 7)** operable to

determine a set of application-specific communication services required by the user application **("The OSA determines a set of lower level communication services for the network user based upon high-level communication requirements and non-requirements of the network user, in block 2406." Page 36, lines 28-31; Figure 24)**, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism, **("The OSA may determine such L1 communication services as the routed path, latency, error rate, and protection mechanism for an optical connection." Page 34, lines 29-31; "One way for the OSA to keep the connection cost down is to accept a connection that multiplexes the user's traffic onto an existing lightpath rather than reserving a separate lightpath for the user." Page 35, lines 27-31)** and

provision the set of application-specific communication services for the user application **("The OSA obtains the lower level communication services for the network user, in block 2408." Page 36, line 31 through page 37, line 1; Figure 24)**.

20. (previously presented) A system comprising:

an optical communication network **(ASON 120; throughout the drawing)**; and

a network user application **(User Application 710, Figure 7)** coupled to the optical communication network, wherein the network user application comprises an optical service agent **(OSA 610, Figures 6, 7)** for obtaining application-specific optical communication services from the optical communication network **("The OSA obtains the lower level communication services for the network user, in block 2408." Page 36, line 31 through page 37, line 1; Figure 24)** via a user-to-network interface (UNI) sufficient to support operation of the network user application **("The OSA determines a set of lower level communication services for the network user based upon high-level communication requirements and non-requirements of the network user, in block 2406." Page 36, lines 28-31; Figure 24)**, the application-specific communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism **("The OSA may determine such L1 communication services as the routed path, latency, error rate, and protection mechanism for an optical connection." Page 34, lines 29-31; "One way for the OSA to keep the connection cost down is to accept a connection that multiplexes the user's traffic onto an existing lightpath rather than reserving a separate lightpath for the user." Page 35, lines 27-31)**.

VI. Grounds of Rejection to be Reviewed on Appeal

All of the pending claims are rejected under 35 U.S.C. 103(a) based on U.S. Pub. No. 2002/0156914 (Lo) in view of U.S. Patent No. 5,351,146 (Chan).

VII. Argument

A. The cited combination fails to teach either determining or provisioning a set of application-specific optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application as recited in claims 1, 6, 12 and 20.

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103(a) is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). Regarding claims 1, 6, 13 and 22, the examiner concedes that Lo fails to disclose determining and provisioning a set of application-specific optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application. However, the examiner asserts that Chan describes these

features at column 5, lines 12-18; column 6, lines 45-49; column 7, lines 49-58; and column 11, lines 8-61. The cited passages describe meeting the demands of applications, but the examiner misconstrues the meaning of those passages and the meaning of the pending claims because the examiner fails to account for context. Chan attempts to solve the problem of planning what infrastructure to install in order to prepare for applications that might be developed at some point in the distant future, whereas the claimed invention as a whole determines what an existing application needs in the immediate future. In view of this contextual difference, the passages cited by the Examiner have a significantly different meaning than asserted by the examiner.

The contextual differences between Chan and the present invention are clearly described and illustrated. As described in the Background of this application, although an optical communication network is capable of providing various communication services to its users,[2] some services are expensive and need to be planned and scheduled well in advance because changes to the optical communication network, such as provisioning and switching optical communication paths, require substantial human intervention.[3] As a result, subscribers tend to purchase services for worst case conditions, rather than what is needed at any given point in time. In other words, the lack of fast provisioning and switching in response to current needs is a problem. In contrast, Chan is concerned with planning for uncertain potential needs in the far distant future. As described in Chan:

[2] Specification at page 2, lines 31-32.
[3] Id. at page 2, line 32 through page 3, line 2.

> While it is difficult to accurately predict the future, it is important that the all-optical transmission system be capable of operating with the applications that future network users may desire to use. To this end, while there are undoubtedly many applications that will be created, some of the various *applications that are likely to be used* can be classified into three categories.[4] (emphasis added)

Chan describes the first category of applications that are likely to be used as having "anticipated data rates [that] span the range from Kbps to Gbps."[5] The second category is analog services.[6] The third category, described in a passage cited by the examiner, is user applications that require an optical interface.[7] The other passages cited by the examiner describe some of the features that potential future applications might use. For example, the passage at column 6, lines 45-49 describes transmission of a "light tree," and the passage at column 7, lines 49-58 suggests that other types of services such as ATM might be offered on top of the all optical network, and the passage at column 11, lines 8-61 describes scheduler agents that allocate paths to users. Clearly, Chan teaches estimating what services currently non-existent applications might require in the far distant future, as opposed to what services are actually required by existing applications in the immediate future.

In view of the context described above, it should be appreciated that the claim limitations distinguish the cited combination. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or

[4] Chan at column 4, lines 49-55
[5] Chan at column 4, lines 57-58.
[6] Chan at column 5, lines 6-11.
[7] Chan at column 5, lines 12-18.

suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Turning now to the limitations recited in the claims, "determining" and "provisioning" a set of "application-specific" optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application implies that the claimed invention determines what an existing application actually requires in the near term, rather than guessing what a non-existent application might require at some time in the far distant future as described by Chan. Chan cannot "determine" and "provision" a set of "application-specific" optical network communication services for a user application that does not even exist. Chan might "guess" or "estimate" what will be needed, but Chan cannot "determine" and "provision" what is needed as recited in the claims. For the reasons stated above, claim 1 distinguishes the cited combination by reciting "determining a set of application-specific optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism." Claim 6 distinguishes the cited combination by reciting "network component logic for determining a set of application-specific optical network communication services for the user application based at least in-part upon the

communication requirements and non-requirements of the user application, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism." Claim 12 distinguishes the cited combination by reciting "an optical service agent operable to determine a set of application-specific communication services required by the user application, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism." Claim 20 distinguishes the cited combination by reciting "a network user application coupled to the optical communication network, wherein the network user application comprises an optical service agent for obtaining application-specific optical communication services from the optical communication network via a user-to-network interface (UNI) sufficient to support operation of the network user application."

It should be noted that there are appreciable practical implications that result from the distinction described above. According to the cited combination of references, network engineers estimate what future applications might require and design the network accordingly. Note that if the estimate is incorrect, substantial human intervention may be required to change the network. For example, if an enterprise estimates the requirements of its applications and subscribes to a carrier's services accordingly, an underestimate would require the enterprise to manually, i.e., person-to-person, request that the carrier deploy additional service capability. Further, deployment of that service capability could require human intervention. In contrast, the presently claimed invention would

help enable the carrier network to automatically determine the actual requirements of an enterprise application and provision the required services, thereby mitigating the requirement for human intervention. The claimed invention can also help the enterprise more efficiently purchase services. The cited combination of Lo and Chan would yield an estimate of required services that could be purchased from the carrier, i.e., nailed-up, 24-7 services. However, if the services are required less frequently than 24-7, the enterprise is purchasing unused services. The presently claimed invention improves efficiency because the carrier network can determine and provision application service requirements when they are needed. For example, an enterprise application could signal to the carrier network that particular service requirements are needed for a period of 30 minutes on a particular date and time, or once per week. This is advantageous because the enterprise would prefer to pay for 30 minutes per week of some costly service as opposed to paying for the service to be constantly available. Further, even though it might not be possible to predict when and what services are required, the claimed invention enhances efficiency because the requirements of the application can be signaled when they are known. In sum, the cited combination fails to teach determining and provisioning a set of application-specific optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application.

B. Claims 2-5, 7-11, 13-19, and 21-27 are allowable for the same reasons as their respective base claims.

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Independent claims 1, 6, 12 and 20 are nonobvious for the reasons already stated above. Claims 2-5, 7-11, 13-19, and 21-27 are therefore allowable.

VIII. Conclusion

Appellants submit that the rejections of the claims discussed above are improper for at least the reasons set forth above. Appellants accordingly request that the rejections be withdrawn and the claims put forward for allowance.

Respectfully submitted,

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Appendix A - Claims

1. (previously presented) A method for provisioning network services for a user application in an optical communication system, the method comprising:

ascertaining communication requirements and non-requirements of the user application;

determining a set of application-specific optical network communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism; and

obtaining, from the optical network, the application-specific communication services for the user application.

2. (previously presented) The method of claim 1, wherein determining a set of communication services for the user application based at least in-part upon the ascertained communication requirements and non-requirements of the user application comprises:

mapping the user application communication requirements and non-requirements to the optical network communication services.

3. (previously presented) The method of claim 1, wherein obtaining the communication services for the user application comprises:

interacting with a core optical communication network to obtain the communication services for the user application.

4. (original) The method of claim 3, wherein the core optical communication network comprises an automatically switched optical network (ASON).

5. (previously presented) The method of claim 1, wherein determining the communication services for the user application comprises:

interacting with at least one peer user application to determine the set of communication services for the user application.

6. (previously presented) An optical service agent for provisioning network services for a user application in an optical communication system, the optical service agent comprising:

application component logic for ascertaining communication requirements and non-requirements of the user application;

network component logic for determining a set of application-specific optical network communication services for the user application based at least in-part upon the communication requirements and non-requirements of the user application, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism; and

network component logic for obtaining the application-specific communication services for the user application.

7. (previously presented) The optical service agent of claim 6, wherein the logic for determining a set of communication services for the user application based at least in-part upon the communication requirements and non-requirements of the user application comprises:

logic for mapping the communication requirements and non-requirements to the communication services.

8. (previously presented) The optical service agent of claim 6, wherein the logic for obtaining the communication services for the user application comprises:
logic for interacting with a core optical communication network to obtain the communication services for the user application.

9. (previously presented) The optical service agent of claim 8, wherein the logic for interacting with a core optical communication network to obtain the communication services for the user application comprises a user-to-network interface (UNI).

10. (original) The optical service agent of claim 9, wherein the core optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

11. (previously presented) The optical service agent of claim 6, wherein the logic for communication services for the user application comprises:

logic for interacting with at least one peer user application to determine communication services for the user application.

12. (previously presented) A device comprising:

a user application requiring communication services from an optical communication network; and

an optical service agent operable to

determine a set of application-specific communication services required by the user application, the communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism, and

provision the set of application-specific communication services for the user application.

13. (previously presented) The device of claim 12, wherein the optical service agent comprises:

logic for ascertaining communication requirements and non-requirements of the user application;

logic for determining a set of communication services for the user based at least in-part upon the communication requirements and non-requirements of the user application; and

logic for obtaining the communication services for the user application.

14. (previously presented) The device of claim 13, wherein the logic for determining a set of communication services for the user application based at least in-part upon the communication requirements and non-requirements of the user application comprises:
logic for mapping the communication requirements and non-requirements to the communication services.

15. (previously presented) The device of claim 13, wherein the logic for obtaining the communication services for the user application comprises:
logic for interacting with a core optical communication network to obtain communication services for the user application.

16. (previously presented) The device of claim 15, wherein the logic for interacting with a core optical communication network to obtain the communication services for the user application comprises a user-to-network interface (UNI).,

17. (original) The device of claim 16, wherein the core optical communication network comprises an automatically switched optical/transport network (ASON)/ and wherein the UNI comprises an ASON UNI.

18. (previously presented) The device of claim 13, wherein the logic for obtaining the communication services for the user application comprises:
logic for interacting with peer user applications to obtain the communication services for the user application.

19. (previously presented) The device of claim 18, wherein the logic for interacting with peer user applications to obtain the communication services for the user application comprises a peer-to-peer interface.

20. (previously presented) A system comprising:

an optical communication network; and

a network user application coupled to the optical communication network, wherein the network user application comprises an optical service agent for obtaining application-specific optical communication services from the optical communication network via a user-to-network interface (UNI) sufficient to support operation of the network user application, the application-specific communications services including at least one of unshared lightpath, shared lightpath, routed path, latency, error rate, and protection mechanism.

21. (original) The system of claim 20, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

22. (previously presented) The system of claim 20, wherein the optical service agent comprises:

logic for ascertaining communication requirements and non-requirements of the network user application;

logic for determining a set of communication services for the network user application based at least in-part upon the communication requirements and non-requirements of the network user application; and

logic for obtaining the communication services for the network user application.

23. (previously presented) The system of claim 22, wherein the logic for determining a set of communication services for the network user application based at least in-part upon the communication requirements and non-requirements of the network user application comprises:

logic for mapping the communication requirements and non-requirements to the communication services.

24. (previously presented) The system of claim 22, wherein the logic for obtaining the communication services for the network user application comprises:

logic for interacting with the optical communication network to obtain the communication services for the network user application.

25. (original) The system of claim 22, further comprising a number of peer network user applications.

26. (previously presented) The system of claim 15, wherein the logic for obtaining the communication services for the user application comprises:

logic for interacting with the number of peer network user applications to obtain the communication services for the network user application.

27. (previously presented) The optical service agent of claim 11, wherein the logic for interacting with peer user applications to obtain the communication services for the user application comprises a peer-to-peer interface.

Appendix B - Evidence Submitted

None.

Appendix C - Related Proceedings

None.